



From the Head, DoMH

Dr. Jayesh M. Dhodiya

Greetings

Progressing further, I feel very grateful to be releasing the 2nd issue of the newsletter in 2022. It makes me very happy to release this issue on the occasion of the 76th Independence Day and the 201st birthday of Arthur Cayley.

As we move further, I wish that the spirit that has united us together 75 years ago and our Honorable Prime Minister's call for Azadi Ka Amrit Mahotsav to commemorate our Independence in order to bring and bind us together in working for the advancement of science and ultimately, for the betterment of society and humankind.

Finally, let us all share Arthur Cayley's vision of breaking scientific boundaries through imaginative thought, which will aid in the creation of new scientific pathways. I'd like to thank the Committee Members for never giving up hope in bringing new ideas and results to this issue

From the Faculty Coordinator

Dr. Saroj R. Yadav

Greetings to all!

As a faculty coordinator of the Newsletter, I feel elated to release the 2nd issue of the Newsletter in 2022 on the occasion of the 75th anniversary of the Independence Day and the 201st birthday of British Mathematician Arthur Cayley. As expected, we were able to reach the public by providing them with continuous updates and we hope that the spirit of Azadi Ka Amrit Mahotsav will inspire us to work hard for the betterment of society.

I am proud to say that the Class of '22 students gave it their all to secure outstanding placements. Congratulations to our '22 batch! We hope that your degree will unlock many doors to the success you all deserve very well.

"May you always have new opportunities come your way, and may you be always successful in your life"

Finally, I would like to thank the wonderful team of newsletter for their continuous support and efforts in forming this document.



ABOUT DEPARTMENT



Vision

To be a model for excellence in educational research in Mathematics and Humanities in order to meet the changing needs of society.

Mission

To become an exemplary Centre of Excellence for research and training in the Mathematical Sciences and Humanities by promoting learning, growth and development of young minds and finding solutions to scientific, technological and real-life problems.

In 2021, the Department of Mathematics & Humanities received its current status. Since 2009, it has been Applied Mathematics & Humanities, and before that, it was part of the Applied Sciences and Humanities Department. Throughout these years, the department has evolved into one of the epicenters of research in India. Since 2007, the department has been offering its own 5 years Integrated M.Sc. Degree Program in Mathematics, in which students are enrolled through Joint Entrance Examination (JEE Mains). The department offers courses in Mathematics, English, and Management to undergraduate and postgraduate students in Engineering and other Science courses. A number of alumni from this department have attained prestigious positions in teaching and research in India and abroad.

The department has highly qualified faculty members including three Professors, three Associate Professors, and twelve Assistant Professors, who have extensive expertise in Fluid Mechanics, Special functions, Algebra, Integral Transforms, Approximation theory, Mathematical modeling, Magnetic fluid dynamics, Biomathematics, Data Mining, Finite element modeling, Techno innovation to Techno Entrepreneurship General Management, Entrepreneurship, Marketing, Postmodern Fiction, and Indian English fiction.

More than 270+ students have enrolled in the department for Five Years Integrated M.Sc., and 82+ Ph.D. students are presently pursuing research. In total, 671 papers have been published by the Department in the reputed SCI/SCIE and Scopus indexed journals. During the last five years, the department has published 106 H index papers and 85 i10 index papers. A total of INR 1,30,63,700/- worth of projects have been carried out by the department in the last five years funded by different agencies such as Department of Science and Technology (DST), NBHM, ISRO and GUJCOST. So far, the department has produced 89 Ph.D. students specializing in Mathematics, Management, and English and the department has a good placement record as well.

DoMH received DST FIST

DST accepted the proposal submitted by Department of Mathematics and Humanities, SVNIT, Surat and Rs. 70 Lakh will be given to strengthen the research facilities in the Department more specifically the amount recommended for 5 year duration will be spent on purchasing latest equipment and Networking facilities with computational software. The amount will also be spent for Networking Laboratory renovation, Industrial R & D, conducting activities pertaining to the Scientific Social Responsibilities and Maintenance. These facilities will help the research scholars and faculties of the Department to enhance the research work in various fields of Mathematics. On this occasion the in-charge director of SVNIT, Dr. R. V. Rao congratulated Dr. Jayesh M Dhodiya, Head DoMH and faculty members of the department and extended his best wishes.

GATE Qualifiers



Urvashi Joshi: AIR 576



Saubhagya Tripathi : AIR 905



Rutvij Tole: AIR 1063



Prakruti Kalsaria: AIR 732



Niraj Velankar: AIR 1619



Sriharshitha Nalumasu: AIR 1619

Student Achievements

Soumyadeep Mandal

- Second prize in Open Mathematical Olympiad for University Students (April 2022) organised by the International University for the Humanities and Development, Turkmenistan.
- Secured first rank in Gujarat state in Madhava Mathematics Competition.



Participations in Programmes

TIFR SWIM Participants

Rajarapu Mahesh (120MA002) and Yerrapati Venkata Subbaiah (120MA012)

Their experiences in the programme:

We have completed the Summer Workout in Mathematics (SWIM) programme

during 01st June - 28th June 2022. We have been taught the Introductory courses consisting of Real analysis, Linear algebra, Statistical Learning and Python Programming. The main aim of this program is to make students good in problem solving and to think in the right way in the problems of maths and different program building skills.



Madhava Nurture Camp Participant

Soumyadeep Mandal (I20MA004)

He has participanted at IIT Bhubaneswar during 20th June to 27th June, 2022.

His experiences in the programme.

'A group of 34 students were selected to attend this year's Madhava Camp at IIT Bhubaneswar, where we pondered topics - Mobius transformation, advanced group theory, and Weirstrass Approximation. We also solved interesting and innovative problems related to them.'



Activites

International Day of Mathematics 2022 Event

On 14th March 2022, there was a program held to celebrate the International Day of Mathematics. Dr. Jayesh M. Dhodiya, Head of the Department, organized the event. Faculty members and research scholars from the department were present to celebrate the event. The first issue of the department's newsletter was released on this occasion with information about departmental activities, achievements, publications, etc for a period of 4 months from November 2021 to February 2022. Prof. A. K. Shukla, Prof. V. H. Pradhan, Prof. Neeru Adlakha, and Dr. Jayesh M. Dhodiya released the newsletter. Dr. Saroj R. Yadav, faculty coordinator of the newsletter committee, thanked the department head, Dr. Jayesh M. Dhodiya, for helping the committee prepare a quality newsletter. The event ended with a vote of thanks by Dr Jayesh M. Dhodiya, Head of the Department.



Award Ceremony

The Department organised an award ceremony on 28th April 2022 for the winners of National Mathematics Day competitions. The event was anchored by PhD scholar Parul Pandey, and Vandana Kakran assisted in the award presentation. Prof. A. K. Shukla and Prof. V. H. Pradhan presented trophies and gold medals to the winners, respectively. Prof. Neeru Adlakha gave silver and bronze medals to rank holders of the competitions. The department head Dr. Jayesh M. Dhodiya thanked all of the winners and participants in his speech. Eventually, he hopes this program will be organized at the state, national, and international levels. Mr. Divyesh Patel took the photographs and all the attendees were served soft drinks. PhD scholars and MSc students successfully coordinated the entire event.



Final Year Farewell Program

On 20th May 2022, the Department of Mathematics and Humanities organized a small program for final-year students. Prof. A. K. Shukla, Prof. V. H. Pradhan, Prof. Neeru Adalakha, Dr. Hemanth P. Bulsara, Dr. Jayesh M. Dhodiya, Dr. Urvashi Kaushal and Dr. R. K. Jana extended their best wishes to the final-year students. The faculty of the department wished the students success in their future endeavors. Then a photo session and refreshments were arranged for students and faculty members. At last, the event concluded with a cheerful chat between faculty and final-year students.



IntERAct

About IntERAct

Dr. R. K. Jana initiated Internship Experiences and Research Activities (Internation 1) in 2017 with the help of a few final year students and hosted weekly seminar series from students relating to internship experiences and research activities. Alumni and faculty have started sharing their research activities and experiences with students since last year. Originally, it was an open discussion series on any mathematics-related topic.

The IntERAct seminars took place online during the pandemic and so far, 50 seminars have been held. Team_IntERAct looks forward to conducting more interesting seminars which will generate enthusiasm in students.

S.No	Title	Speaker
1.	Do Mathematics make a good Economist?	Dr. Paritosh Jha
2.	Introduction to Fractional Calculus	Mr. Rutvij Tole
3.	Dirichlet theorem on primes in arith- metic progressions	Mr. Vaibhav Gupta
4.	The Role of LUB Axiom in Real Analysis	Ms. Priya Singh
5.	Glimpses into Hyperbolic Geometry	Ms. Prakruti Kalsaria
6.	Inadequacy of classical logic in classical harmonic oscillator	Mr. Ramkumar Rad- hakrishnan
7.	Aztec Diamonds and their Tiling	Mr. Niraj Velankar





Expert Talks delivered in other Organizations

Dr. A. K. Shukla

- 1. A talk on "The pRq (α, β;z) Function" at Ramanujan Institute for Advanced Study in Mathematics, University of Madras, Chennai, India on March 9, 2022.
- 2. A talk on "Recent Studies on pRq(α, β;z) Function" in National Conference On Mathematical Analysis & Applications-2022 (NCMAA-2022), organized by Department of Mathematics, Shivaji University, Kolhapur during March 21-22, 2022.
- 3. A talk on "The pRq (α, β;z) Function" in the National Seminar on Mathematical Modeling of Real World Problems. Organized by Mathematical Section of Applied Science & Humanities Department, Sarvajanik College of Engineering & Technology (SCET), Surat, India on March 25, 2022.

Dr. Hemant Kumar

- Keynote speech on "Commercialization of Technology Innovations: Issues and Challenges" on 12th May, 2022, 36th ISTANBUL International Conference on "Arts, Literature, Humanities and Social Sciences" (IALHS-22) scheduled on May 11-13, 2022 Istanbul (Turkey) organized by Researchers in Humanities, Social Sciences (DRHSS) under Dignified Researchers Publication (DiRPUB). (Online mode)
- 2. Keynote speech on "Techno-innovation to Technoentrepreneurship: Issues and Challenges" on 1st June, 2022, PORTO 31st International Conference on Literature, Language, Education and Social Sciences (PICLLE-22) scheduled on May 31-June 2, 2022 Porto (Portugal) organized by International Centre of Excellence in Humanities, Social Sciences and Interdisciplinary Studies. (Online mode)

Dr. Jayesh M. Dhodiya

- 1. A talk on Uncertain Mathematical Modelling and their solution in the Workshop on Mathematical Modeling and its application at Sarvajanik College of Engineering & Technology, Surat. (25/03/22)
- 2. A talk on "Mathematical Modelling with Uncertain Environment" at VIT Bhopal, M.P. (26/04/22).
- 3. A talk on "Mathematical Modelling with fuzzy number and its solution" in the National Symposium on Recent Trends in Mathematical Sciences on 30/04/2022 at Ganpat University Mehsana, Gujarat, India.

Dr. Urvashi Kaushal

1. A talk on "How to Select the Right Journal for Publication", One Day Faculty Development Program on Ethics in Research Publication organised by Grand Academic Portal (GAP) & Balani Infotech. Online on 25th June 2022.

Dr. Twinkle R. Singh

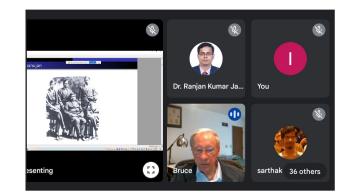
1. Two expert lectures on "Mathematical Modeling of Important Phenomena arising in Fluid Flow" on March 8th and 9th in One-week Highend workshop sponsored by Accelerate Vigyan, SERB, Govt. of India on "Application of statistical tools and modelling in Engineering and Science" 07th – 13th March 2022, Venue: SVNIT, Surat (Online)

Dr. Ranjan Kumar Jana

- 1. A lecture on "On Extended Wright type Hypergeometric functions and their applications" in International Webinar on Special Functions and their Applications, organized by Department of Mathematics, in association with IQAC, University of Kerala. (25/03/2022)
- 2. Delivered an Invited Talk at Department of Applied Mathematics with Oceanology & Computer Programming, Vidyasagar University, Midnapore as an "Interaction and Motivational Talk to the PG Students" on 25.03.2022.
- 3. Delivered an invited talk (on 08.06.2022) entitled "Application of Community Land Surface Model (CLM) for improving Rice Crop Dynamics" at International Conference on Applied Mathematics ICAM-2022), held at Vidyasagar University, Midnapore, during June 08-09, 2022.

Expert Lectures delivered in Department

- 1. "Ramanujan: More than a Century of Inspiration" by Prof. Bruce C. Berndt, Professor Emeritus, Department of Mathematics, University of Illinois at Urbana-Champaign, USA on 14/03/2022 organized by Dr. Ranjan Kumar Jana.
- 2. "Basics of investment and their importance" by Adison Khanker, LIC member on 04/04/2022 organized by Dr. Jayesh M. Dhodiya.



Publications

A Sharma, N Adlakha (2022), A Model for Analysis of Gene Expression in the Cell Involving Protein Degradation, Advances in Systems Science and Applications 22 (1), 65-79, 2022.

Rupali Gupta, Sushil Kumar (2022), Numerical simulation of variable-order fractional differential equation of nonlinear Lane-Emden type appearing in astrophysics. International Journal of Nonlinear Sciences and Numerical Simulation https://doi.org/10.1515/ijnsns-2021-0092

Dhiren Pandit, Jayesh Dhodiya, Yogeshwari Patel (2022), Molecular cancer classification on microarrays gene expression data using wavelet-based deep convolutional neural network, https://doi.org/10.1002/ima.22780, Wiley. (SCI and Scopus).

Shubha Agnihotri and Jayesh M. Dhodiya (2022), Variants of Genetic algorithm to solve multiobjective interval solid transportation problem, Palestine journal of Mathematics.

Archana C. Varsoliwala, Twinkle R. Singh (2022), Mathematical modeling of atmospheric internal waves phenomenon and its solution by ElzakiAdomian decomposition method, Journal of Ocean Engineering and Science, 7 (2022) 203–212, https://doi.org/10.1016/j.joes.2021.07.010.

Archana C. Varsoliwala, Twinkle R. Singh (2022), Solution of foam drainage model by Elzaki Adomian decomposition method, MATHEMATICS IN ENGINEERING, SCIENCE AND AEROSPACE, MESA - www.journalmesa.com, Vol. 13, No. 2, pp. 545-557.

Jani Haresh P., Twinkle R. Singh (2022), Study of concentration arising in longitudinal dispersion phenomenon by Aboodh transform homotopy perturbation method." International Journal of Applied and Computational Mathematics 8.4 (2022): 1-10.

A. Pal, R. K. Jana and A. K. Shukla (2022), "Generalized integral transform and fractional calculus properties involving extended pRq(α,β;z)\$ function", Journal of the Indian Mathematical Society, Vol. 89, Nos. (1-2), 2022, pp. 100-116.

D. J. Bhatt, V. N. Mishra and R. K. Jana (2022), A study on approximation properties of Durrmeyer type operator based on beta function, Nonlinear Studies, Vol. 29, No. 2, 2022, pp. 411-427.

Ramakanta Meher, Vishalkumar J. Prajapati (2022), A robust analytical approach to the generalized Burgers–Fisher equation with fractional derivatives including singular and non-singular kernels, Journal of Ocean Engineering and Sciences.

Ramakanta Meher, L. Verma, Z Avazzadeh, O Nikan (2022), Solution for generalized fuzzy fractional Kortewege-de Varies equation using a robust fuzzy double parametric approach, Journal of Ocean Engineering and Sciences.

Ramakanta Meher, P. Sartanpara (2022), The generalized time-fractional Fornberg-Whitham equation: An analytic approach, Partial Differential Equations in Applied Mathematics.

Ramakanta Meher, L. Verma (2022), Effect of heat transfer on Jeffery-Hamel Cu/Ag-water nanofluid flow with fuzzy volume fraction using double parametric fuzzy homotopy analysis method, The European Physical Journal Plus, Vol.137 (3), 372.

Ramakanta Meher, J Kesarwani, Z Avazzadeh, O Nikan (2022), Numerical treatment of temporalfractional porous medium model occurring in fractured media, Journal of Ocean Engineering and Sciences.

Ramakanta Meher, R. Yadav and V. N Mishra (2022), Approximation properties by some modified Szasz-Mirak-jan-Kantorovich operators, Numerical Analysis and Applications.

Shailesh Kumar Srivastava and Sachin Devaiya (2022), Error Estimation of Signals (Functions) Belonging to Class W (L^p, Ψ(t), β) for Hump Matrices, AIP Conference Proceedings 2435, 020043 (2022), https://doi.org/10.1063/5.0083602.

Shailesh Kumar Srivastava and Sachin Devaiya (2022), On 2T -Strong Convergence of Numerical Sequences, AIP Conference Proceedings 2435, 020036 (2022), https://doi.org/10.1063/5.0083598.

R. K. Maurya, Y. M. Tripathi, T. Kayal (2022), Reliability Estimation in a Multicomponent Stress-Strength Model Based on Inverse Weibull Distribution, Sankhya B, pp 364-401, Vol. 84, Springer.

Book/Book Chapter Publications

J. P. Chauhan, R. K. Jana, J. J. Nieto, P. V. Shah and A. K. Shukla (2022), Fractional Calculus Approach to Logistic Equation and its Application, Chapter 15, pp. 261-274, In: P. Debnath, H. M. Srivastava, P. Kumam and B. Hazarika (Eds.), Fixed Point Theory and Fractional Calculus, Forum for Interdisciplinary Mathematics, Springer, Singapore, 2022.

Verma R., Kumar S. (2022), Temperature Distribution in Living Tissue with Two Dimensional Parabolic Bioheat Model Using Radial Basis Function. In: Ray S.S., Jafari H., Sekhar T.R., Kayal S. (eds) Applied Analysis, Computation and Mathematical Modelling in Engineering. Lecture Notes in Electrical Engineering, vol 897. Springer, Singapore. https://doi.org/10.1007/978-981-19-1824-7_24.

S. Tilva, J. Dhodiya (2022), Evolutionary Approaches in Engineering Applications, Industrial Transformation Implementation and Essential Components and Processes of Digital Systems, 1st Edition, CRC Press, Vol-1 Chapter-8, pp 173-190, Taylor & Francis, https://doi.org/10.1201/9781003229018.

Anita Ravi Tailor, Dhiren Pandit, Jayesh M. Dhodiya (2022), Multi-Objective Interval Assignment Problems and their Solutions Using Genetic Algorithms, Industrial Transformation Implementation and Essential Components and Processes of Digital Systems, 1st Edition, CRC Press, Vol-1 Chapter-7, pp. 143-172 (2022) Taylor & Francis, https://doi.org/10.1201/9781003229018.

Anita R. Tailor and Jayesh M Dhodiya (2022), Uncertain Multi-Objective COTS Product Selection Problems for Modular Software System and Their Solutions by Genetic Algorithm, Computational Intelligence Applications for Software Engineering Problems, Apple Academic Press, CRC Press, Taylor & Francis Group, Hard ISBN: 9781774910467

Gender Equity: Challenges and Opportunities: Proceedings of 2nd International Conference of Sardar Vallabhbhai National Institute of Technology, Surat, Eds. Mahajan, V., Chowdhury, A., Kaushal U., Jariwala N., Bong S.A., Springer, Singapore.

Ramakanta Meher (2022), Textbook on Ordinary Differential Equations, A Theoretical Approach, ISBN: 9788770227636; e-ISBN: 9788770227629, River Publishers, USA.

Conference Presentations

Tilva, S., & Dhodiya, J. (2022), "Fuzzy project schedule problem is solved by hybrid jaya algorithm" in international conference on "International Conference on Data Analytics and Computing (ICDAC2022)", hosted online by the Wenzhou Kean University, Wenzhou, China, during 28-29 May, 2022.

Anita Ravi Tailor, Jayesh M. Dhodiya (2022), Solution of fuzzy multi-objective multichoice assignment problem using Genetic algorithm based approach, 1st International conference on Mathematical Engineering and Management Sciences, 25-26 June, 2022, DQM Research Centre, Serbia.

Aaishwarya Bajaj and Jayesh M. Dhodiya (2022), "Aspiration Level based Multi Objective Quasi Oppositional Jaya Algorithm for Multi Objective Solid Travelling Salesman Problem" presented in National Symposium on "Recents Trends in Mathematical Sciences (RTMS-2022)" held by Department of Mathematics, Ganpati University, Mehsana, Gujarat, India during 30 April, 2022.

Aniket Todkar and Jayesh M. Dhodiya (2022), "Aspiration level-based non-dominated sorting genetic algorithm- II & III to solve fuzzy multi-objective shortest path problem" presented in National Symposium on "Recents Trends in Mathematical Sciences (RTMS-2022)" held by Department of Mathematics, Ganpati University, Mehsana, Gujarat, India during 30 April, 2022.

Parekh K.S., Kaushal U. (2022). From Marginalization to Independence: Journey of a Mother and a Nation. Gender Equity: Challenges and Opportunities: Proceedings of 2nd International Conference of Sardar Vallabhbhai National Institute of Technology, Surat, Eds. Mahajan V., Chowdhury A., Kaushal U., Jariwala N., Bong S.A., Springer, Singapore. https://doi.org/10.1007/978-981-19-0460-8_27, pp 271-281.

Pillai A.A., Kaushal U. (2022). She Education, Not Necessarily a Job Quotient. Gender Equity: Challenges and Opportunities: Proceedings of 2nd International Conference of Sardar Vallabhbhai National Institute of Technology, Surat, Eds, Mahajan V., Chowdhury A., Kaushal U., Jariwala N., Bong S.A. (eds), Springer, Singapore, https://doi.org/10.1007/978-981-19-0460-8_6.pp 63-76.

Pallavi Panda and Urvashi Kaushal (2022), presented a paper on "Locating the Roots of Gender based violence: Reading Meena Kandaswamy's When I hit You" in International Conference Cartographies of Gender Based Violence: Literary Reflections from South Asia and Beyond organised by IIT Patna on 12-13th March 2022.

Mithun G. Vasava and Urvashi Kaushal (2022), presented a paper on "Questionable Representation of Culture: Analysing Select works of South Asian Diaspora Writers in International Conference Cartographies of Gender Based Violence: Literary Reflections from South Asia and Beyond organised by IIT Patna on 12–13th March 2022.

Jyoti Yadav, Twinkle R. Singh (2022), An approximate analytical solution of water transport in an unsaturated porous medium by Modified Variational Iteration Method" is presented at International Conference on Congress on Research in Engineering, Science and Management (CRESM 2022), organized by Padre Conceicao College of Engineering, Verna, Goa, March 10-12, 2022.

Jyoti Yadav, Twinkle R. Singh (2022), Study on a motion of immiscible fluids with some inclination effect in the porous medium is presented at the 5th International E-Conference on Mathematical Advances and Applications (ICOMAA 2022), held on May 11-14, 2022, Istanbul, Turkey.

Jani Haresh P., Twinkle R. Singh (2022), Hybrid analytical method to compare concentration in longitudinal dispersion phenomenon is presented in international conference on mathematical analysis and applications organised by University of Kalyani during 28-29 June 2022.

Jani Haresh P., Twinkle R. Singh (2022), comparison of concentration in longitudinal dispersion phenomenon by Aboodh transform homotopy perturbation method with numerical method is presented in second international conference on computational sciences-modelling, computing and soft computing organised by manipal institute of technology, manipal, during March 28-30, 2022.

Ramakanta Meher, L. Verma (2022), Solution of Fuzzy differential equation using Homotopy Analysis Method, AIP Conference Proceedings.

Ramakanta Meher, P. Sartanpara (2022), Computational study of Klein-Gordan equation using Homotopy Analysis Method, AIP Conference Proceedings.

Sudeep Singh Sanga (2022), Fuzzy modeling for single server queue with double orbit and balking, International Conference on Mathematics Applied In Life Sciences, June 23-24, 2022, Iași, Romania.

Placement Statistics (A.Y. 2021-22)



URVASHI JOSHI
Placed at Aakash Institute
as Faculty



AKSHAY KISHORE
Placed at Federal Bank
as Junior Officer



RONAK SHARMA
Placed at MyClassroom as Faculty



SAUBHAGYA TRIPATHIPlaced at MyClassroom as Faculty

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